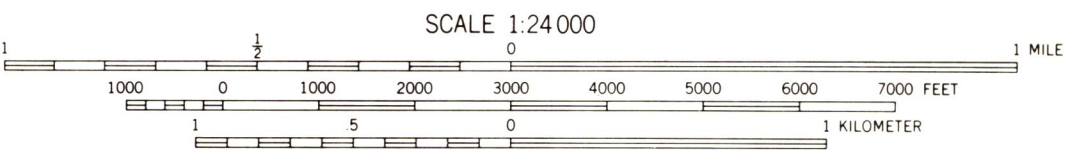


Base from U.S. Geological Survey Redmond Canyon 7.5' Quadrangle, 1966

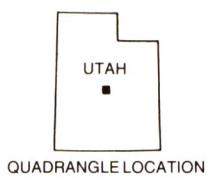


CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

**GEOLOGIC MAP OF THE
REDMOND CANYON QUADRANGLE,
SANPETE AND SEVIER COUNTIES, UTAH**

by
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1991

Cartography by J. Parker



DESCRIPTION OF MAP UNITS

- Qa₁

Younger alluvial deposits. Poorly to moderately sorted, clay- to boulder-sized material deposited in active washes, ephemeral stream channels and small mountain valleys. Commonly gradational with other deposits. Generally less than 100 feet (30 m) thick, except in valley areas where thickness is unknown.
- Qa₂

Older alluvial deposits. Poorly to moderately sorted clay- to boulder-sized material deposited in washes, ephemeral stream channels, and small mountain valleys. Isolated and being eroded by downcutting of nearby drainage systems. Commonly gradational with other deposits. Generally less than 100 feet (30 m) thick.
- Qaf₁

Younger alluvial-fan deposits. Poorly to moderately sorted, locally derived, boulders through clay, with some loess, deposited in fan-shaped lobes at slope changes near the mouths of streams and washes. Generally fine-grained away from the mountain front. Thickness unknown.
- Qaf₂

Older alluvial-fan deposits. Poorly to moderately sorted, boulders through clay, with some loess, deposited in fan-shaped lobes at slope changes near the mouths of streams and washes. Similar to the younger alluvial-fan deposits (Qaf₁), but have been uplifted or tilted by diapirism in the Redmond Hills. Thickness unknown.
- Qms

Mass-movement/landslide deposits. Poorly sorted, boulder- to clay-sized material; hummocky-surfaced; deposited in lobate mounds by landsliding and slumping. Involve colluvial material and weathered rock of the Colton Formation. Moved most recently from 1983 to 1985. Generally less than 50 feet (15 m) thick.
- Qapv

Pediment deposits containing volcanic clasts. Deposits on pediment-cut surfaces that contain volcanic clasts derived from "gravel deposits of Redmond Hills" (QTag). Pediment surfaces are continuous with adjacent pediments (Qap₁) and the deposits are similar in composition except for the volcanic clasts. Generally less than 30 feet (9 m) thick.
- Qap₂
Qap₄

Pediment deposits. Poorly sorted, boulder- to clay-sized material deposited as a thin veneer on pediment surfaces. Generally less than 40 feet (12 m) thick. Locally gradational with, or includes, other deposits to facilitate mapping. The numbering scheme is a continuation of numbering applied in the Aurora quadrangle to the south (Willis, 1988). "Qap₄" deposits are the highest and oldest. "Qap₂" deposits are of the intermediate level. "Qap₁" and "Qap₃" deposits are not differentiated in the Redmond Canyon quadrangle.
- QTag

Gravel deposits of Redmond Hills. Moderately well-sorted cobbles, pebbles, and sand with minor amounts of mud and clay that cap and flank the Redmond Hills. In many places, beds are tilted away from the center of the hills at 20 to 40 degrees. Probably 0 to 500 feet (0-150 m) or more thick. Late Tertiary or Quaternary in age.
- QTao

Older alluvial valley-fill deposits. Poorly to moderately sorted, conglomerate with interbedded mudstone and sandstone. Underlie, and commonly covered by, pediment deposits. Derived from Tertiary rocks to the west. Difficult to distinguish from the Sevier River Formation in some places. Ranges from 0 to more than 2,000 feet (0-600 m) in thickness. Late Tertiary or early Quaternary in age.
- Tse

Sevier River Formation. Pale-gray, yellow or greenish-gray, poorly to moderately sorted and bedded mudstone, sandstone, conglomerate, and carbonaceous mudstone. Generally, lower part is coarsest and most poorly sorted. Contains a few reworked ash beds in upper part; in the Aurora quadrangle, to the south, one such bed yielded a fission-track age of 5.2 ± 0.4 million years (Willis, 1988). Some outcrops near southern border of quadrangle were previously mapped by Gilliland (1951) and Witkind and others (1987) as Eocene or Oligocene Bald Knoll Formation (now formation of Aurora — see text discussion) but map relationships and fission track dating confirm that the beds are Sevier River Formation. Probably more than 600 feet (180 m) thick. (Note: on the cross section this unit may include other Tertiary rocks present beneath Sevier Valley).
- To

Osiris Tuff. Densely welded porphyritic, latitic tuff. Light-gray, purplish-gray, or brownish-gray; 70-80% matrix, 10-20% plagioclase, 1-3% biotite, 2-5% sanidine, 0.5-2% pyroxene and minor Fe-Ti oxides. The biotite and plagioclase are particularly conspicuous in hand samples. Has a distinct basal vitrophyre. Derived from Monroe Peak caldera and is about 23 million years old (Fleck and others, 1975; Steven and others, 1984). Occurs in one small outcrop along eastern border where it is about 50 feet (15 m) thick.
- Trc

Clay and sandstone deposits in Redmond Hills. Gray, white, yellow, red, purple, and green bentonitic clay deposits with interbedded fluvial sandstone, minor conglomeratic sandstone, and travertine. A potassium-argon isotopic determination yielded an age of 25.8 ± 1.0 million years for the volcanic source of this unit, but the age of deposition may be younger. Thickness is unknown but may exceed 1,000 feet (300 m).
- Trt

Travertine deposits in Redmond Hills. Yellow to reddish-yellow, thin- to medium-bedded travertine deposits interbedded with the clay deposits described above. Ranges up to about 200 feet (60 m) thick. Numerous thin travertine beds are not differentiated on the map.
- Tch

Crazy Hollow Formation. Brownish-orange to reddish-brown mudstone and siltstone, locally bentonitic, and pale gray or yellow, lenticular, medium- to coarse-grained sandstone. The sandstone has a "salt-and-pepper" appearance due to dark-colored chert and lithic grains. Unit generally has a basal conglomerate or conglomeratic sandstone; however, unit interfingers with the upper Green River Formation in several areas (Willis, 1986). About 150 feet (45 m) thick in the southern part of the quadrangle. Absent in the central and northern part. Late Eocene in age.
- Tg

Green River Formation. Greenish-gray to pale-green, thin-bedded to laminated shale, light-brown calcareous sandstone, and mudstone in the lower part; and pale yellow to brownish-yellow, chalky limestone, oolitic limestone, dense silicified limestone and chert in the upper part. About 950-1,100 feet (285-330 m) thick. Eocene in age.
- Tco

Colton Formation. Reddish-brown, gray, purple, white and green, bentonitic mudstone, siltstone, and sandstone with local calcareous beds. Grades upward into the more calcareous Green River Formation. Easily eroded and generally forms a strike valley. Overall, thins from about 400 feet (120 m) near the northern border to 350 feet (105 m) near the southern border. About 250 feet (75 m) thick near Redmond Canyon.
- Tfu

Upper member of the Flagstaff Formation. Pale-gray, and to a lesser extent, pale-reddish-gray or reddish-yellow, thick-bedded to massive, micritic limestone, and lesser sandy limestone, mudstone, and carbonaceous shale. Bedding is indistinct and partially destroyed by rooting and bioturbation. 250 to 550 feet (75-165 m) thick. Eocene in age.
- Tfm

Middle member of the Flagstaff Formation. Generally dark-reddish-brown, poorly bedded limestone, sandstone, calcareous mudstone, and minor conglomerate. Member thickens southward at the expense of the underlying and overlying units from 160 to about 400 feet (50-120 m) thick. Clastic content increases southward; member is primarily sandstone, mudstone, and conglomerate near the southern border. Some small outcrops are difficult to distinguish from underlying and overlying members.

Tfl

Lower member of the Flagstaff Formation. Interbedded pale-gray, yellowish-gray, and reddish-gray micritic limestone, argillaceous limestone, mudstone, and sandstone. Generally has a thick micritic limestone bed near the top. Lower part is sandy and gradational with the underlying North Horn Formation. 700 to 1,100 feet (210-330 m) thick. Eocene in age.

TKnh

North Horn Formation. Interbedded brown and brownish-yellow sandstone and yellow, gray, and brown siltstone, sandstone, and mudstone. Sandstone beds form resistant, lenticular ledges and the mudstone and siltstone form slopes. Gradational with the overlying Flagstaff Formation. About 1,450 feet (435 m) are exposed; however, thickness is probably well over 2,000 feet (600 m) in the quadrangle. Probably Eocene in age, but lower part may be as old as Cretaceous.

Ku

Cretaceous rocks, undifferentiated. Shown only on the cross section. Probably includes the Cedar Mountain Formation, Indianola Group, and Price River Formation. Thickness is unknown.

Jae

Unit E of the Arapien Shale (of Hardy, 1952). Dark-reddish-brown, featureless siltstone with local white patches of "salt-bloom" on the surface. Mostly massive salt in the subsurface. Only a few feet are exposed in a very small area near the east border of the quadrangle, but in subsurface, may be in diapiric pods that exceed 1,000 feet (300 m) in thickness. Bedded thickness is much less.
- MAP SYMBOLS
- Contact — dashed where approximately located

Fault — dashed where location inferred, dotted where concealed; queried where probable; bar and ball on downthrown side

25

80

+

+

Strike and dip of bedding — inclined, vertical, overturned

80

+

Strike and dip of joints — inclined, vertical

x

Prospect pit — tr = travertine

Open-pit clay mine — hachures show approximate disturbed area

x

Gravel or road-fill pit

*

Radiometric age determination/sample location
- LITHOLOGIC COLUMN
- | | PERIOD | | UNIT | SYMBOL | THICKNESS
(feet, meters) | LITHOLOGY |
|----------|-----------|---------------------|--|------------|----------------------------------|----------------------------------|
| | QUAT. | EPOCH | | | | |
| TERTIARY | Pleist. | H. | Surficial deposits | Q | 0-100 (0-30) | |
| | | | Gravel deposits of Redmond Hills | QTag | 0-500+ (0-150) | |
| | | | Older alluvial valley-fill deposits | QTao | 0-2000+ (0-600+) | |
| | Pliocene | Miocene | Sevier River Formation | Tse | 0-600+ (0-180+) | |
| | | | Osiris Tuff | To | 0-50 (0-15) | |
| | Oligocene | | Bentonitic clay and sandstone (Trc) — and — travertine (Trt) deposits of the Redmond Hills | Trc
Trt | 0-1000+ (0-300+)
0-200 (0-60) | |
| | | | Crazy Hollow Formation | Tch | 0-150 (0-45) | |
| | Eocene | | Green River Formation | Tg | 950-1100 (285-330) | |
| | | | Colton Formation | Tco | 250-400 (75-120) | |
| | | | | Tfu | 250-550 (75-165) | |
| | | Flagstaff Formation | Middle Member | Tfm | 160-400 (50-120) | |
| | | | Lower Member | Tfl | 700-1100 (210-330) | |
| CRET. | Upper | Pal. | North Horn Formation | TKnh | 1450+ (435+) | |
| | | | Undifferentiated Cretaceous rocks | Ku | 3000+ (900+) | |
| JUR. | Middle | | Arapien Shale — Unit E | Jae | 1000+ (300+) | in subsurface only — not exposed |
- CORRELATION OF MAP UNITS
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